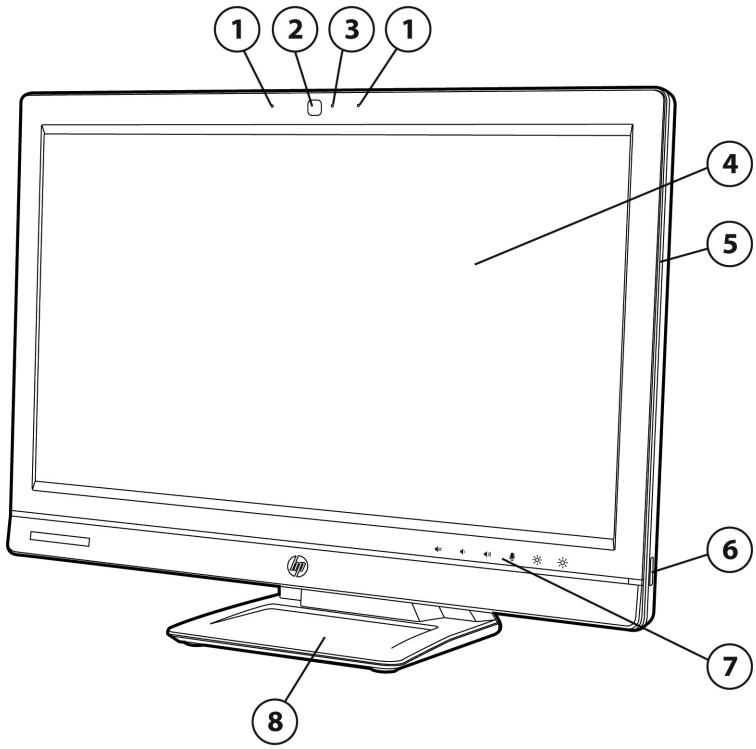
Overview

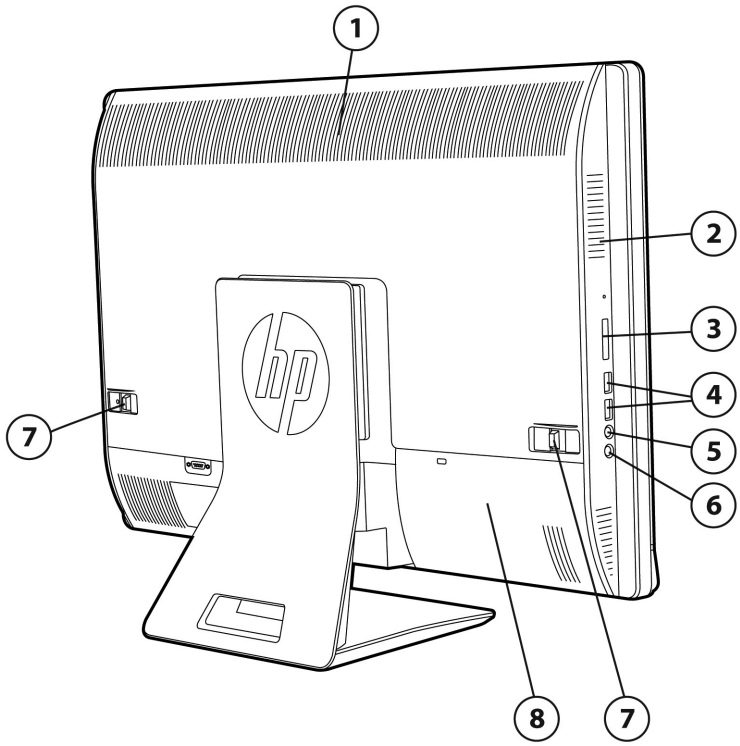


FRONT

1. Dual microphone array
2. 2.0 MP Webcam (optional)
3. Webcam Activity LED (only on models with Webcam)
4. 23-inch Full HD capable screen (with or without optical touch panel option)
5. Optical drive opening
6. Power button
7. Capacitive Controls for Brightness, Volume, Mic Mute, Speaker Mute

8 Stand(Can be configured with no stand, basic stand, or height adjustable/reclining stand)

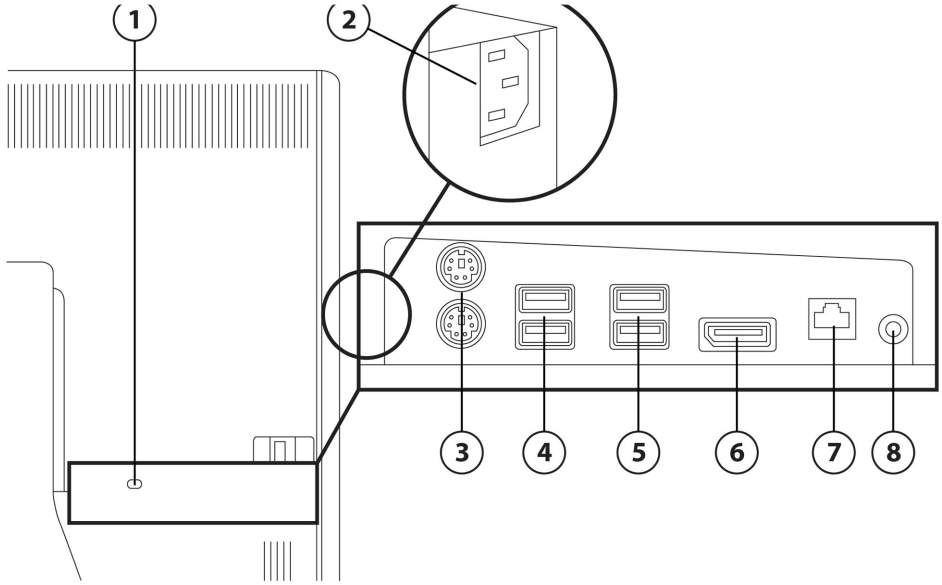
Overview



BACK

1. Vent slots
2. Side venting
3. 6-in-1 Media Card Reader (optional)
4. (2) USB 3.0 ports
5. Mic input jack
6. Headphone jack
7. Access panel latches
8. Rear port cover

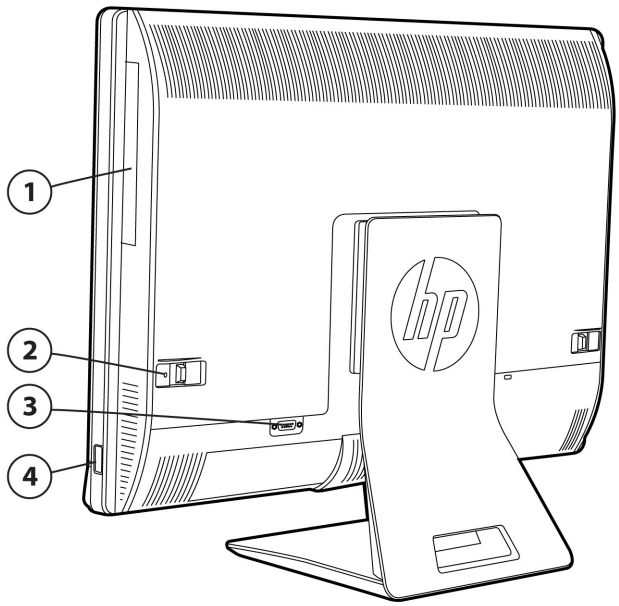
Overview



REAR PORTS (BEHIND COVER)

1. Security lock slot
2. Power connector
3. PS/2 mouse and keyboard connectors
4. (2) USB 2.0 ports
5. (2) USB 3.0 ports
6. DisplayPort connector
7. RJ-45 Gigabit Ethernet port
8. Stereo line out

Overview



SIDE

1. Slim tray-load optical drive
2. Security screw
3. Optional serial port
4. Power button

At A Glance

- Windows 7 Professional 32- and 64-bit
- UEFI BIOS developed and engineered by HP for better security, manageability and software image stability
- Integrated all-in-one form factor
- 23-inch (1920 x 1080) diagonal widescreen WLED backlit anti-glare LCD, with or without Optical Touch Panel option
- Landscape or portrait display orientation[1]
- Optional height adjustable/reclining stand
- Intel® Q77 chipset
- Intel 2nd & 3rd generation Core™ processors
- Intel vPro™ Technology available with select processors
- Integrated Intel HD Graphics
- Optional MXM Discrete graphics
- Integrated Intel 82579LM Gigabit Network Connection
- Optional wireless connectivity:
  - Intel Advanced-N 6205 WLAN (mini PCI Express) - Intel 802.11 a/b/g/n
  - WLAN (mini PCI Express) - HP 802.11 b/g/n
  - WLAN and Bluetooth Combo Card - HP 802.11 a/b/g/n and Bluetooth® 4.0

Overview

- WiDi support (with Intel 6205 WLAN)
- Optional Integrated 2.0 MP webcam & Dual Microphone Array
- High performance integrated stereo speakers
- SRS Premium Sound PRO™
- Up to 16 GB of DDR3 SDRAM, dual channel memory support, two SODIMM slots
- Support for up to 3 storage drives (2 SATA, 1 mSATA) with RAID support
- Up to 1 TB SATA hard drive, up to 128GB Solid State Drive and 256GB Self-Encrypting Solid State Drive
- Optional Intel Smart Response Technology support with 24GB mSATA SSD Flash Cache Module
- Optional slim Tray-load SuperMulti Optical Disc Drive or DVD ROM Optical Disc Drive
- Optional 6-in-1 Media Card Reader
- Optional serial port
- DisplayPort out
- Integrated VESA 100min x 100max mounting holes
- Lockable rear access panel with intrusion sensor
- ENERGY STAR® qualified. EPEAT® registered where applicable/supported. See www.epeat.net for registration status by country.
- CCC, CECP & SEPA Certified
- Qualified for Microsoft Lync
- TCO AiO and Edge
- BFR/PVC Free
- Arsenic Free
- Protected by HP Services, including standard warranties up to 5-5-5 (terms and conditions vary by country; certain restrictions and exclusions apply)

[1] Portrait orientation not recommended for Touch

Standard Features

OPERATING SYSTEM

Preinstalled

Windows 8 Pro (64-bit)*, ±
Windows 8 (64-bit)*, ±
Windows® 7 Ultimate (32-bit)**
Windows® 7 Ultimate (64-bit)**
Windows® 7 Professional (32-bit)**
Windows® 7 Professional (64-bit)**
Windows® 7 Professional (32-bit) (available through downgrade rights from Windows 8 Pro)***, ±
Windows® 7 Professional (64-bit) (available through downgrade rights from Windows 8 Pro)***, ±
Windows® 7 Home Premium (32-bit)**
Windows® 7 Home Premium (64-bit)**
Windows® 7 Home Basic (32-bit)** , ±
FreeDOS 2.0
Novell SUSE Linux Enterprise Desktop 11

±Not available with Touch option.

*Not all features are available in all editions of Windows 8. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 8 functionality. See http://www.microsoft.com.

**Not all features are available in all editions of Windows 7. This system may require upgraded and/or separately purchased hardware to take full advantage of Windows 7 functionality. See http://www.microsoft.com/windows/windows-7/ for details.

***This system is preinstalled with Windows® 7 Pro software and also comes with a license and media for Windows 8 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

PROCESSOR

Intel® 3rd Generation Core™ i7 Processors

Intel® Core™ i7-3770
Up to 3.9 GHz Max. Turbo Frequency (3.4 GHz base frequency), 8 MB cache, 4 cores, 8 threads
Intel HD Graphics 4000
Supports DDR3 memory up to 1600 MT/s data rate
Supports Intel vPro Technologies and Intel's Stable Image Platform Program (SIPP)

Intel® 3rd Generation Core™ i5 Processors

Intel® Core™ i5-3570
Up to 3.8 GHz Max. Turbo Frequency (3.4 GHz base frequency), 6 MB cache, 4 cores, 4 threads
Intel HD Graphics 2500
Supports DDR3 memory up to 1600 MT/s data rate
Supports Intel vPro Technologies and Intel's Stable Image Platform Program (SIPP)

Standard Features

Intel® Core™ i5-3470
Up to 3.6 GHz Max. Turbo Frequency (3.2 GHz base frequency), 6 MB cache, 4 cores, 4 threads
Intel HD Graphics 2500
Supports DDR3 memory up to 1600 MT/s data rate
Supports Intel vPro Technologies and Intel's Stable Image Platform Program (SIPP)

Intel® 3rd Generation Core™ i3 Processors

Intel® Core™ i3-3240
3.4 GHz base frequency, 3 MB cache, 2 cores, 4 threads
Intel HD Graphics 2500
Supports DDR3 memory up to 1600 MT/s data rate

Intel® Core™ i3-3225
3.3 GHz base frequency, 3 MB cache, 2 cores, 4 threads
Intel HD Graphics 4000
Supports DDR3 memory up to 1600 MT/s data rate

Intel® Core™ i3-3220
3.3 GHz base frequency, 3 MB cache, 2 cores, 4 threads
Intel HD Graphics 2500
Supports DDR3 memory up to 1600 MT/s data rate

Intel® 2nd Generation Core™ i3 Processors

Intel® Core™ i3-2130
3.4 GHz base frequency, 3 MB cache, 2 cores, 4 threads
Intel HD Graphics 2000
Supports DDR3 memory up to 1333 MT/s data rate

Intel® Core™ i3-2120
3.3 GHz base frequency, 3 MB cache, 2 cores, 4 threads
Intel HD Graphics 2000
Supports DDR3 memory up to 1333 MT/s data rate

Intel® 3rd Generation Pentium® Processors

Intel® Pentium® G2120
3.1 GHz base frequency, 3 MB cache, 2 cores, 2 threads
Intel HD Graphics
Supports DDR3 memory up to 1600 MT/s data rate

Intel® 2nd Generation Pentium® Processors

Intel® Pentium® G870
3.1 GHz base frequency, 3 MB cache, 2 cores, 2 threads
Intel HD Graphics
Supports DDR3 memory up to 1333 MT/s data rate

Intel® Pentium® G860
3.0 GHz base frequency, 3 MB cache, 2 cores, 2 threads
Intel HD Graphics
Supports DDR3 memory up to 1333 MT/s data rate

Standard Features

Intel® Pentium® G645
2.9 GHz base frequency, 3 MB cache, 2 cores, 2 threads
Intel HD Graphics
Supports DDR3 memory up to 1066 MT/s data rate

Intel® Pentium® G640
2.8 GHz base frequency, 3 MB cache, 2 cores, 2 threads
Intel HD Graphics
Supports DDR3 memory up to 1066 MT/s data rate

CHIPSET

Intel® Q77

INTEL VPRO TECHNOLOGY CAPABLE

Intel Core i5 with vPro and Core i7 with vPro technology is a selectable feature that is available on units configured with select processors, and a preinstalled Windows operating system. It provides advances in remote manageability, security, energy efficient performance, and wireless connectivity. Intel Active Management Technology 8.0 (iAMT) offers an advanced set of remote management features and functionality which provides network administrators the latest and most effective tools to remotely discover, heal, and protect networked client systems regardless of the system's health or power state. AMT 8.0 includes the following advanced management functions:

- Power Management (on, off, reset)
- Hardware Inventory (includes BIOS and firmware revisions
- Hardware Alerting
- Agent Presence
- System Defense Filters
- SOL/IDER
- Cisco NAC/SDN Support
- ME Wake-on-LAN
- DASH 1.1 compliance
- IPv6 Support
- Fast Call for Help - a client inside or outside the firewall may initiate a call for help via BIOS screen, periodic connections, or alert triggered connection
- Remote Scheduled Maintenance - pre-schedule when the PC connects to the IT or service provider console for maintenance. Remote PCs can get required patches, be inventoried, etc by connecting to their IT console or Service Provider when it's convenient
- Remote Alerts - automatically alert IT or service provider if issues arise
- Access Monitor - Provides oversight into Intel® AMT actions to support security requirements
- PC Alarm Clock
- Microsoft NAP Support
- Host Base set-up and configuration
- Management Engine (ME) firmware roll back
- Wireless AMT functionality on Desktop (WoDT)*
- Enhanced KVM resolution

* Requires Intel Advanced-N 6205 WLAN 802.11a/b/g/n PCIe Minicard Wireless Module

Standard Features

INTEL® STANDARD MANAGEABILITY

Includes DASH 1.0/1.1 compliance plus:

- System Defense
- Agent Presence
- SOL/IDE Redirection
- CISCO NAC/SDN support
- ME Wake on LAN
- Host Based Configuration
- ME Firmware Rollback
- IPv6 Support

DASH 1.0/1.1 compliance:

- Boot Control
- HW Inventory
- SW Inventory
- Power State Management
- HW Alerting

SMBIOS

System Management BIOS, previously known as DMI BIOS, is used to store system management information

GRAPHICS

Integrated *(depends on processor)*

Intel HD Graphics: Basic, 2000, 2500, or 4000

Models with Intel Core i3/i5/i7 processors include HD 2000, 2500, or 4000 graphics. Models with Pentium or Celeron processors include HD graphics. Please see specific processors for graphics configuration.

Discrete (optional)

AMD Radeon HD 7650A 2GB DDR3 MXM Graphics

Graphics controller	AMD Radeon HD 7650A
Core clock	600MHz max
Memory clock	800MHz max
Memory frame buffer	2GB, DDR3, 128-bit wide
Memory	2GB DDR3
Supported Graphics APIs	DX11, OpenGL, full 1080p BD (H264) playback in hardware, Multi-Stream DisplayPort support (supports up to 4 displays total - 4 independent video and audio streams)

NVIDIA GeForce GT 630M 2GB DDR3 MXM Graphics

Graphics controller	NVIDIA GF108
Core clock	675MHz

Standard Features

Memory clock	900MHz
Memory frame buffer	2GB, DDR3, 128-bit wide
Memory	2GB DDR3
Supported Graphics APIs	DX11, OpenGL, full 1080p BD (H264) playback in hardware

WIRELESS DISPLAY

WiDi support with Intel Advanced-N 6205 WLAN (mini PCI Express)

Desktop system requirements for Intel Wireless Display

System Component	Requirement
Processor	3rd generation Intel® Core processor
Graphics	Intel® HD Graphics
Wireless	Intel Advanced-N 6205 WLAN (mini PCI Express)
Software	Intel® My WiFi Technology and Intel® Wireless Display must be pre-installed and enabled.
OS	Windows 7 64-bit, Home Premium, Ultimate or Professional

DISPLAY

Optical and non-touch

23"diagonal TN widescreen WLED backlit anti-glare[2] LCD; orientation designed to operate in portrait or landscape; with or without Optical Touch Panel option

Display Panel	Type	TN (Twisted Nematic) LED Backlit LCD
	Viewable image area - 23" models (horizontal & vertical)	509.76(H) x 286.74(V)
	Screen opening 23" models (H x V)	513.8 (H) x 290.8 (V)
	Native Resolution	1920 x 1080
	Aspect ratio	16:9
	Contrast ratio (typical)	1000:1
	Brightness (typical)	250 nits (cd/m^2)
	Viewing angle (typical)	85/85/80/80 (L/R/U/D)
	Pixel pitch	0.2655(H) x 0.2655(V)
	Backlight lamp life (to half brightness)	30,000 hours minimum
	Color support	Over 16 million colors (through FRC)
	Color gamut (typical)	72%
	Anti-glare	Yes

Standard Features

	Default color temperature Warm (6500K) [2]8300 Non-touch is anti-glare **NOTE:** All performance specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.
Basic Stand Tilt Angle	-5° to +30°
Height Adjustable /Reclining Stand Tilt Angle	Low position sliding height adjustment => -5° to +60° High position sliding height adjustment => -5° to +30° Vertical adjustment=> up to 110 mm

WEBCAM & MIC

Optional integrated 2 MP webcam & dual microphone array; maximum resolution of 1920 x 1080

STORAGE

3.5" SATA Hard Drive

250 GB, 7200 rpm, SATA 6.0 Gb/s, SMART IV
500 GB, 7200 rpm, SATA 6.0 Gb/s, SMART IV
1 TB, 7200 rpm, SATA 6.0 Gb/s, SMART IV

2.5 " SATA Hard Drive

320 GB, 7200 rpm, SATA 6.0 Gb/s, SMART IV
500 GB, 7200 rpm, SATA 6.0 Gb/s, SMART IV

2.5" Solid State Drive

120 GB, SATA, Solid State Drive
128 GB, SATA, Solid State Drive

2.5" Self-Encrypting Solid State Drive

256 GB, SATA, Self-Encrypting Solid State Drive

2.5" Self-Encrypting Drive

500 GB, SATA, Self-Encrypting Drive

Flash Cache Module

24GB mSATA SSD Flash Cache Module (Intel Smart Response Technology - Optional with Core Processors)

Optical Disc Drive

Slim Tray-load SATA DVD-ROM
Slim Tray-load SATA SuperMulti DVD Writer
No included Optical Disc Drive

Media Card Reader (optional)

6-in-1 PCIe Interface
Supports Secure Digital (SD, SDHC), MultiMedia Card (MMC), xD-Picture Card, Memory Stick, Memory Stick Pro

Standard Features

MEMORY

Type

Non-ECC, DDR3 SDRAM, 1600 MT/s, SODIMM

Maximum

16 GB

# of Slots

2
204-pin supporting dual-channel memory
Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

NOTE: Full availability of 4 GB or more of memory requires a 64-bit operating system. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

Memory modules support data transfer rates up to 1600 MT/s; actual data rate is determined by the system's configured processor. See processor specifications for supported memory data rate.

NETWORKING/COMMUNICATIONS

Ethernet (RJ-45)

Integrated Intel 82579LM Gigabit Network Connection

NOTE: The term "10/100/1000" or "Gigabit" Ethernet indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

Wireless LAN (optional)

Intel 802.11a/b/g/n wireless 6205 PCIe minicard
Up to 300 mbps data rate

HP 802.11b/g/n wireless PCIe minicard
Up to 300 mbps data rate

HP 802.11a/b/g/n wireless minicard with Bluetooth Combo
Up to 300 mbps data rate
Bluetooth 4.0 compliant
Works with a wide range of Bluetooth devices

Standard Features

AUDIO/MULTIMEDIA

SRS Premium Sound PRO™
IDT 92HD91 Audio - 16 & 24-bit PCM
High performance integrated stereo speakers
Volume control and mute buttons
Stereo headphone jack
Microphone in
Stereo line out
Integrated 2.0 MP webcam (up to 30 frames/sec) & dual microphone array (optional)

KEYBOARDS AND POINTING DEVICES

Keyboard

HP PS/2	104 keys plus special functions for Mute, Volume Up, Volume Down, Sleep Separate numeric keypad Cable length 51 in (130 cm)
HP USB Keyboard	104 keys plus special functions for Mute, Volume Up, Volume Down, Sleep Separate numeric keypad Cable length 51 in (130 cm)
HP Wireless Keyboard & Mouse	104 keys plus special functions for Mute, Volume Up, Volume Down, Sleep Separate numeric keypad; two buttons with scroll wheel acting as third button Operates at ~ 2.4 GHz and supports a working distance of up to 32 ft (10m) Cable length 6ft (1.8m)
HP USB CCID SmartCard Keyboard	104, 105, 106, 107, 109 layout (depending upon country Carbonite/Silver All ISO 7816 smart cards
HP USB PS/2 Washable Keyboard	SpillSeal® keyboard technology protection USB & PS/2 support in one solution Separate numeric keypad Cable length 7ft (2.2m)

Mice

HP PS/2 Mouse	Two buttons with scroll wheel 72.8 in (185 cm)
HP USB Optical Mouse	Two buttons with scroll wheel 72.8 in (185 cm)
HP USB 1000dpi Laser Mouse	1000 dpi support Two buttons with scroll wheel Cable length 70.8 in (180 cm)
HP USB PS/2 Washable Scroll Mouse	SpillSeal® mouse technology protection Two buttons with scroll wheel 8.8 ft total 70 cm+ 2m extension

HP BIOS

Key features of the HP BIOS include:

- Deployment and manageability - HP BIOS provides several technologies that help integrate the HP Compaq Elite 8300 Business PC into the enterprise, such as PXE, remote configuration, remote control, and F10 Setup support for 12 languages.
- Select models feature either Intel Standard Manageability or Intel Core vPro Processor Technology.
- Stability - HP BIOS supports the HP stable product roadmap by releasing only critical BIOS changes to the factory and advanced change notification.
- Support UEFI specification 2.1
- Computrace agent - For tracking and tracing services, available in select countries, separate software and purchase of a subscription is required.
- Thermal and power management - The HP BIOS provides and enables thermal and power management technologies so component temperatures are managed for high reliability and to assist in operating the HP Business Desktop computer in any enterprise environment.
- Thermal Controlled Fans - Automatic or manual controlled fan speeds for cooling and acoustic performance. Serviceability - HP BIOS provides diagnostic and detailed service information.
- Upgrades and recovery - HP BIOS provides numerous ways to upgrade HP Business Desktop computers, including BIOS updates from within DOS (DOSFlash), BIOS updates from within Windows (HPQFlash), HP Client Manager, and fail-safe recovery (Emergency Boot Block Recovery). In addition, the HP Business Desktop BIOS Utilities tool enables replicated BIOS setup throughout the Enterprise; it is available from within the BIOS software and from the support website.
- HP BIOS uses PKI signing of the BIOS for trusted BIOS upgrades and recovery.
- Serviceability - HP BIOS provides diagnostic and detailed service information.

Additional HP BIOS Features:

- Power-On password - Helps prevent an unauthorized user from powering on the system.
- Administrator password - Also known as the setup password, this helps prevent unauthorized changes to the system configuration. If the administrator password is not known, the BIOS version cannot be changed and changes cannot be made to BIOS settings using F10 setup or under the OS.
- Advanced Configuration and Power Interface (ACPI) - Represents a significant innovation in power and configuration management, allowing operating systems and applications to manage power based on activity and usage. HP Elite models use ACPI to provide power conservation features.
- S5 Max Power Savings setting supports EU Lot6 requirement and allows the computer to power down below 1W is S5 (when turned off). When S5 Max Power Savings feature is enabled power to slots is turned off along with WOL functionality.
- Master Boot Record Security - Helps to prevent changes and/or infections to the Master Boot Record caused by viruses or malicious code.
- HP BIOS Protection - prevents unauthorized updates or changes to the BIOS due to malware, viruses, or malicious BIOS updates. Based on NIST SP800-147 policy guidelines.

Standard Features

SECURITY

USB port disable
Lockable Access Panels
Security Screw
HP Keyed Cable Lock (optional)
Common Criteria Certified, Infineon TPM SLB9635TT1.2 - 3.17 FW
Intrusion Detector
Wall Mountable via VESA bracket
Support for Nobel Locking Plate (3rd party option)
Support for 3M Privacy Screen (3rd party option), for non-touch models

POWER

Internal 230W, 90% efficient, active PFC
100-240V AC

HP Power Assistant software (optional)
Provides real-time reporting of how system settings impact the energy consumed by the PC and the potential savings over time.

SOFTWARE

Included	Windows 8	Windows 7
Security	HP Client Security***** • Credential Manager • Password Manager • One Step Logon • Face Recognition • SpareKey • Device Access Manager w/JITA • Drive Encryption* • Computrace - *optional* ** Windows Defender	HP Client Security***** • Credential Manager • Password Manager • One Step Logon • Face Recognition • SpareKey • DigitalPass • Device Access Manager w/ JITA • Drive Encryption (McAfee) • File Sanitizer • Privacy Manager Computrace - *optional* ** Microsoft Security Essentials
Windows Applications	Internet Explorer Store Desktop Photos Mail Games Calendar People (contacts) Messaging SkyDrive Music Video	Internet Explorer Bing Search

Standard Features

	Camera News Sports Weather Maps Finance Bing (Search)	
Productivity	Buy Microsoft Office to activate Office Software on this PC	MS Office Professional 2010 MS Office Home and Business 2010 MS Office Starter 2010 HP Power Assistant
HP Additions	SRS Premium Sound PRO HP PageLift HP Registration HP Getting Started with Windows 8 HP ePrint*** HP Support Assistant HP Wallpaper CyberLink Media Suite Windows 8 CyberLink Media Suite CyberLink YouCam (Pre-installed on models with Webcam)**** CyberLink YouCam Windows 8**** CyberLink Webcam Sharing Manager**** CyberLink Power2Go CyberLink Photo Director CyberLink Power Director HP Mobile Connect Evernote Skype	SRS Premium Sound PRO Corel WinDVD 10.0 SD (DVD) Player***** Roxio Creator Business 10 HD***** HP Marketplace HP Wallpaper
Desktop Applications	HP Wireless Hotspot HP Support Assistant PDF Complete, corporate edition	PDF Complete Corporate Edition WinZip Basic Adobe Flash Player
HP Documentation (eDOCS)	HP eHelp Documentation HP Hardware Reference Guide HP Quick Setup & Getting Started Guide HP Regulatory and Safety Information HP Safety and Comfort Guide HP Warranty Documentation	HP eHelp Documentation HP Hardware Reference Guide HP Quick Setup & Getting Started Guide HP Regulatory and Safety Information HP Safety and Comfort Guide HP Warranty Documentation
HP Support Applications	HP EUDI Support Environment HP Help and Support HP Registration HP Support Assistant	HP EUDI Support Environment HP Help and Support HP Recovery Manager HP Setup v9.0 HP Support Assistant
AiO Applications	HP TouchSmart - *only Touch option* HP Magic Canvas - *only Touch option* HP MyDisplay HP Linkup Intel Wireless Display	HP TouchSmart - *only Touch option* HP Magic Canvas - *only Touch option* HP MyDisplay HP Linkup Intel Wireless Display

Standard Features

*Available via download
** Computrace agent is shipped turned off, and must be activated by customers when they purchase a subscription. Subscriptions can be purchased for terms ranging from one to five years. Service is limited, check with Absolute for availability outside the U.S.
*** Requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see www.hp.com/go/eprintcenter). Requires optional broadband module. Broadband use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Separately purchased data plans or usage fees may apply. Print times and connection speeds may vary.
****Preinstalled on models with webcam
*****Optional

ENVIRONMENTAL & INDUSTRY

Energy Star® qualified models available

EPEAT® registered where applicable/supported. See www.epeat.net for registration status by country.

Industry standard certifications:
UL
CSA
FCC compliance
ENERGY STAR®
EPEAT® Gold
EUP Lot6 Tier2
CCC
CECP
SEPA
TCO AiO and Edge
Qualified for Microsoft Lync
BFR/ PVC Free
Arsenic Free

For accessibility information on HP products, please visit: http://www.hp.com/accessibility.

WEIGHTS & DIMENSIONS

Weight

Product Weight

Basic stand
21.7 - 25.5 lbs
9.85 - 11.55 kg

Height adjustable/reclining stand
33.4 - 37.1 lbs
15.15 - 16.85 kg

Without stand
16.9 - 20.6 lbs
7.65 - 9.35 kg

Shipping Weight

Box	**Pallet**
Basic Stand	Basic Stand (18 units)
30.78 lbs	595.35 lbs
13.96 kg	270 kg

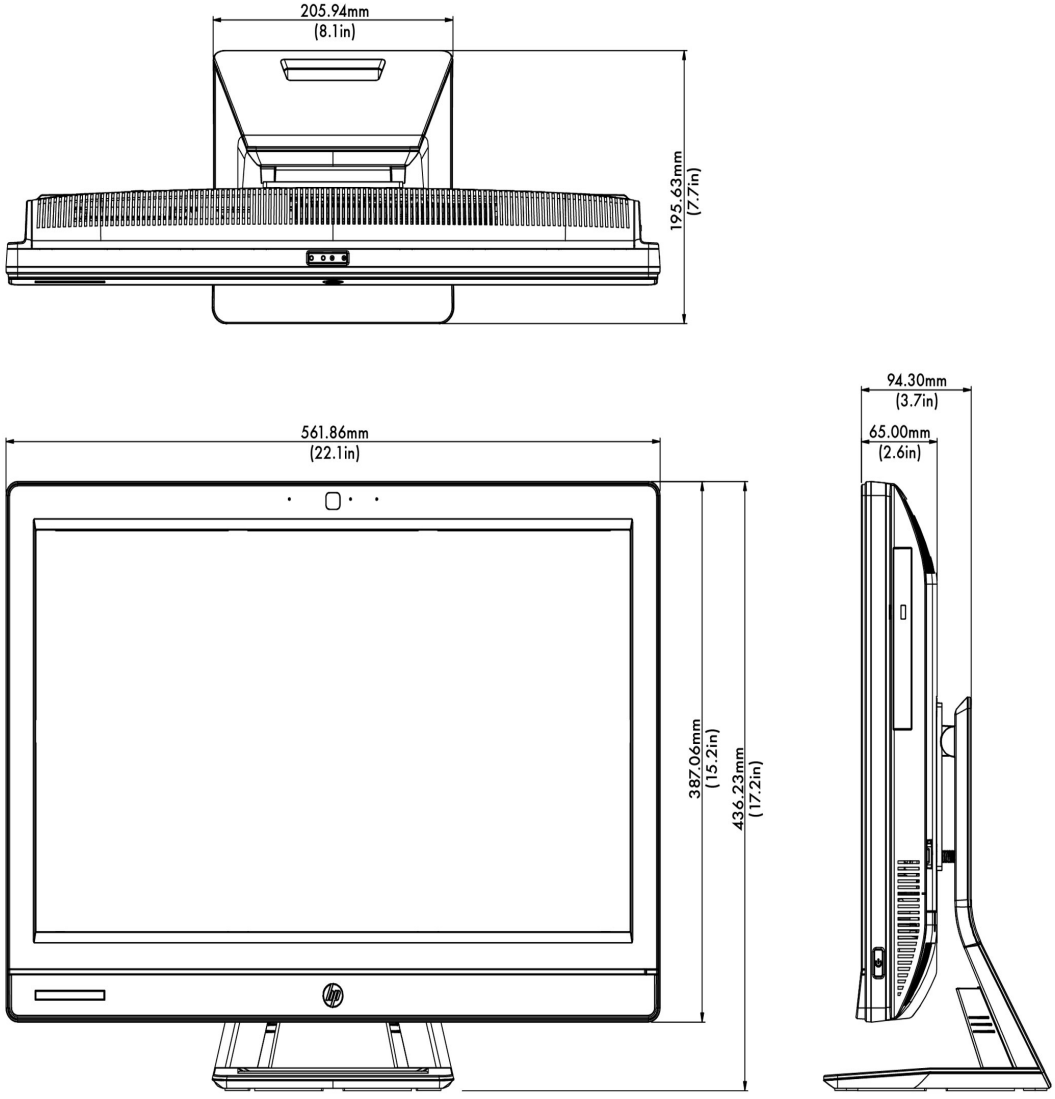
Standard Features

	Height adjustable/reclining stand 43.81 lbs 19.87 kg	Height adjustable/reclining stand (12 units) 567.66 lbs 257.44 kg
	Without stand 28.38 lbs 12.87 kg	Without stand (18 units) 595.35 lbs 270 kg
Weight without Touch Panel	**Product Weight**	
	Basic stand 19.9 - 23.6lbs 9.02 - 10.72 kg	
	Height adjustable/reclining stand 31.6 - 35.3 lbs 14.32 - 16.02 kg	
	Without stand 15 - 18.8 lbs 6.82 - 8.52 kg	
	Shipping Weight	
	Box	**Pallet**
	Basic Stand 30.78 lbs 13.96 kg	Basic Stand (18 units) 595.35 lbs 270 kg
	Height adjustable/reclining stand 43.81 lbs 19.87 kg	Height adjustable/reclining stand (12 units) 567.66 lbs 257.44 kg
	Without stand 26.06 lbs 11.82 kg	Without stand (18 units) 510.41 lbs 231.48 kg
Dimensions (W x D x H)	**Product Dimensions**	
	Basic stand 22.1 x 7.7 x 17.2 in 561.9 x 195.6 x 436.23 mm	
	Height adjustable/reclining stand 60 degrees 22.1 x 14.7 x 11 in 561.9 x 374.5 x 278.5 mm	0 degrees 22.1 x 9.7 x 20.9 in 561.9 x 247.5 x 529.7 mm
	Without stand 22.1x2.6x15.2 in 561.9x65x387.1 mm	
	Shipping Dimensions	
	Box	**Pallet**
	Basic stand 25.98 x 10.67 x 21.61 in 660 x 271 x 549 mm	Basic stand (18 units) 47.24 x 39.37 x 69.57 in 1200 x 1000 x 1767 mm

Standard Features

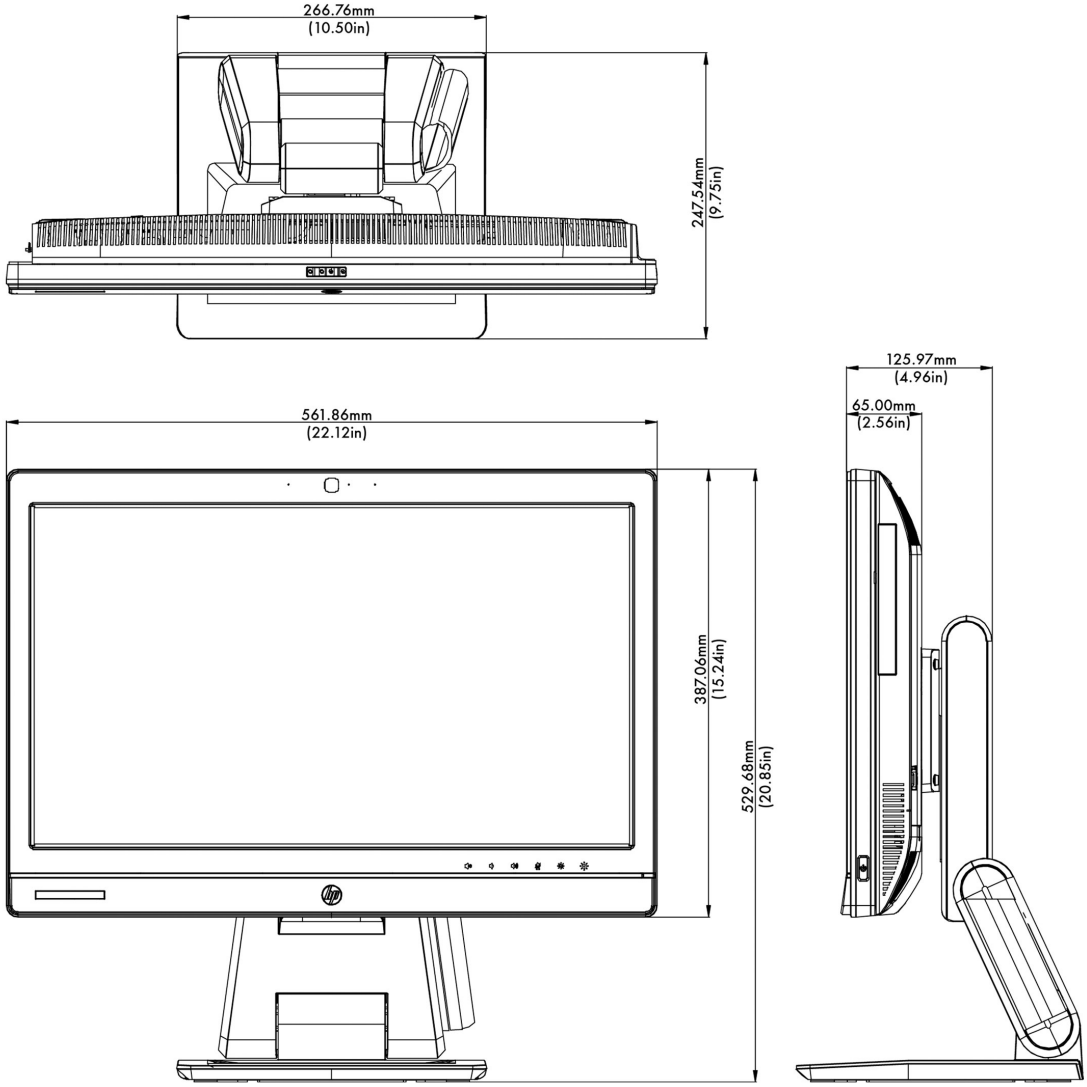
Height adjustable/reclining stand 28.54 x 12.95 x 21.26 in 725 x 329 x 540 mm	Height adjustable/reclining stand (12 units) 47.24 x 39.37 x 6850 in 1200 x 1000 x 1740mm
Without stand 25.98 x 10.67 x 21.61 in 660 x 271 x 549 mm	Without stand (18 units) 47.24 x 39.37 x 69.57 in 1200 x 1000 x 1767 mm

BASIC STAND DIMENSIONS



Standard Features

HEIGHT ADJUSTABLE/RECLINING STAND DIMENSIONS



TEMPERATURE, HUMIDITY, ALTITUDE

Temperature	Operating	50° to 95° F (10° to 35° C)
	Non-operating	-22° to 140° F(-30° to 60° C)
Relative humidity	Operating	10% to 90% (non-condensing at ambient)
	Non-operating	5% to 95% (non-condensing at ambient)
Altitude (unpressurized)	Operating	10,000 ft (3048 m)
	Non-operating	30,000 ft (9144 m)

Standard Features

PORTS

I/O Ports - Standard

4 - USB 3.0 (2 side, 2 rear)
2 - USB 2.0 (2 rear)
2 - PS/2 (legacy) (one keyboard, one mouse)
1 - Microphone in (side)
1 - Headphone jack (side)
1 - Serial RS-232 (rear) (optional)
1 - Stereo audio line out (rear)
1 - Power connector (rear)
1 - RJ-45 (rear)

1 - DisplayPort
DisplayPort connector supports multimode technology to support connection to DVI-D, HDMI and VGA monitors with optional adapters or to a DisplayPort monitor with a DisplayPort Cable.

DisplayPort Cable	Provides a direct connection between the PC's DisplayPort interface to the display's DisplayPort interface
DisplayPort To DVI-D Adapter	Provides a connection from the PC's DisplayPort interface to the display's DVI-D interface; adapts the DP output to the DVI-D input
DisplayPort To HDMI Adapter	Provides a connection from the PC's DisplayPort interface to the display's HDMI interface; adapts the DP output to the HDMI input
DisplayPort To VGA Adapter	Provides a connection from the PC's DisplayPort interface to the display's analog VGA interface; adapts the digital DP output to the analog VGA input

SLOTS

1 - Mini PCIe half-length (used by wireless LAN module)
1 - MXM 3.0 Type A - 35W
1 - mSATA

BAYS

1 - 3.5" internal; Supports One - 3.5" hard drive or up to Two - 2.5" hard drives (HDD/SSD/SED)
1 - 5.25" external; Slim Line Optical Drive

Standard Features

SERVICE AND SUPPORT

On-site Warranty [1]: Three-year (3-3-3) limited warranty delivers three years of on-site, next business day [2] service for parts and labor and includes free telephone support [3] 24 x 7. Three-year onsite and labor are not available in all countries. Service offers terms up to 5 years by choosing a Care Pack. To choose the right level of service for your HP product, visit HP Care Pack Central: www.hp.com/go/cpc

NOTE 1: Terms and conditions may vary by country. Certain restrictions and exclusions apply. Other warranty variations may be offered in your region.

NOTE 2: On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.

NOTE 3: Technical telephone support applies only to HP-configured Compaq and third-party HP qualified hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.

Technical Specifications – Graphics

Intel HD Graphics

VGA Controller	Integrated
DisplayPort	1.1a; integrated, multimode capable; supports HDCP and audio over DisplayPort
Bus Type	PCI Express x16
RAMDAC	Integrated, 350 MHz
Memory	Intel graphics do not have dedicated memory but utilizes some of the computer's system memory The amount of memory used for graphics depending on the amount of system memory installed, BIOS settings, operating system, and system load. 32 MB is pre-allocated for graphics use at system boot time. Additional memory can be allocated at boot time by the BIOS for PAVP (Protected Audio Video Playback) support for playback of protected video content. Additional memory is allocated for graphics as needed using Intel's Dynamic Video Memory Technology (DVMT), to provide an optimal balance between graphics and system memory use.
Maximum Graphics Memory	Microsoft Windows 7 Up to 1.7GB **Note**: the actual amount of maximum graphics memory can be less than the amounts listed above depending upon your computer's configuration.
HW Video Decode	AVC/VC1/MPEG2/JPEG/MJPEG/PAVP
Maximum Color Depth	32 bits/pixel

Graphics/Video API Support	3rd Generation Core processors:
	• The Processor Graphics contains a refresh of the seventh generation graphics core enabling substantial gains in performance and lower power consumption. Up to 16 EU support.
	• Next Generation Intel Clear Video Technology HD Support is a collection of video playback and enhancement features that improve the end user's viewing experience
	  ○ Encode/transcode HD content
	  ○ Playback of high definition content including Blu-ray Disc
	  ○ Superior image quality with sharper, more colorful images
	  ○ Playback of Blu-ray disc S3D content using HDMI (V.1.4 with 3D)
	• DirectX Video Acceleration (DXVA) support for accelerating video processing
	  ○ Full AVC/VC1/MPEG2 HW Decode
	• Advanced Scheduler 2.0, 1.0, XPDM support
	• Windows 7, Windows XP, OSX, Linux OS Support
	• DirectX 11, DirectX 10.1, DirectX 10, DirectX 9 support
	• OpenGL 3.3 support
	
	2nd Generation Core processors:
	• The Processor Graphics contains a refresh of the sixth generation graphics core enabling substantial gains in performance and lower power consumption.
	• Next Generation Intel Clear Video Technology HD support is a collection of video playback and enhancement features that improve the end user's viewing experience.
	  ○ Encode/transcode HD content
	  ○ Playback of high definition content including Blu-ray Disc
	  ○ Superior image quality with sharper, more colorful images
	  ○ Playback of Blu-ray disc S3D content using HDMI (V.1.4 with 3D)
	• DirectX Video Acceleration (DXVA) support for accelerating video processing

- Full AVC/VC1/MPEG2 HW Decode
- Advanced Scheduler 2.0, 1.0, XPDM support
- Windows 7, XP, Windows Vista, OSX, Linux OS Support
- DirectX 10.1, DirectX 10, DirectX 9 support
- OpenGL 3.0 support

Supported Display Resolutions and Refresh Rates

NOTE: other resolutions may be available but are not recommended as they may not have been tested and qualified by HP

Resolution	Refresh Rates
800x600	60 Hz
1024x768	60 Hz
1152x864	60 Hz
1280x600	60 Hz
1280x720	60 Hz
1280x800	60 Hz
1280x960	60 Hz
1280x1024	60 Hz
1360x768	60 Hz
1366x768	60 Hz
1400x1050	60 Hz
1440x900	60 Hz
1600x900	60 Hz
1600x1200*	60 Hz
1680x1050	60 Hz
1920x1080	60 Hz
1920x1200*	60 Hz
1920x1440*	60 Hz
2560x1440*	60 Hz
2560x1600*	60 Hz

* Only supported on displays connected to the external DisplayPort connector.

Technical Specifications – Graphics

AMD Radeon HD 7650A Graphics Card

Form Factor	MXM 3.0
Graphics Controller	AMD Radeon HD 7650A
Core Clock	600MHz
Memory Clock	800MHz
Memory	2GB, DDR3, 128-bit wide
Bus Type	MXM
Max. Power	35W
Power Source Support	12V and 19V
3D API Support	DX11, SMS
HDCP Support	Yes
Display Max. Resolution	Digital 2560 x 1600 Analog 2048 x 1536
Supported Graphics APIs	DX11, OpenGL, full 1080p BD (H264) playback in hardware, Multi-Stream DisplayPort support

Supported Display Resolutions and Refresh Rates

NOTE: other resolutions may be available but are not recommended as they may not have been tested and qualified by HP

Resolution	Refresh Rates
800 x 600	60 Hz
1024 x 768	60 Hz
1280 x 720	60 Hz
1280 x 768	60 Hz
1280 x 1024	60 Hz
1360 x 768	60 Hz
1440 x 900	60 Hz
1600 x 900	60 Hz
1680 x 1050	60 Hz
1920 x 1080	60 Hz

NVIDIA GeForce GT 630M

Bus Type	MXM 3.0A
Graphics Chip	GT630M
Engine Clock	675MHz
Memory Data Rate	900MHz
Memory Size (width)	2GB (128 bit), DDR3
3D API Support	Yes
HDCP support	Yes
Max. Power	35-37W
Power Source Support	12V and 19V
Display Max. Resolution	1920 x 1080

Technical Specifications – Graphics

Supported Display Resolutions and Refresh Rates

NOTE: other resolutions may be available but are not recommended as they may not have been tested and qualified by HP

Resolution	Refresh Rates
800 x 600	60 Hz
1024 x 768	60 Hz
1280 x 720	60 Hz
1280 x 768	60 Hz
1280 x 1024	60 Hz
1360 x 768	60 Hz
1440 x 900	60 Hz
1600 x 900	60 Hz
1680 x 1050	60 Hz
1920 x 1080	60 Hz

Introduction:

HP Serial Advanced Technology Attachment (SATA) Hard Drives maximize the performance of HP Business PCs by providing the technologies to meet your increasing storage demands with high-capacity drives offering superior reliability and performance.

SATA provides faster data transfer speeds, better system cooling airflow, more bandwidth, more headroom for speed increases in future generations and better data integrity. A next-generation technology, the SATA interface connects hard drives to the PC platform enabling easy aggregation of multiple hard drives into a single PC. This offers you the additional benefits of dedicated bandwidth, the ability to more easily identify device failures and scalability. The HP Compaq 6300 Pro Series supports the latest SATA 6.0Gb/s specification.

HP Drive Lock

HP Serial ATA Hard Drives offer enhanced security via a new Drive Lock. When enabled, this ATA security feature set prevents software access to user data on the drive until one or two user-defined passwords are provided.

SMART IV Technology

Self Monitoring Analysis and Reporting Technology (SMART) hard drive technology allows hard drives to monitor their own health and to raise flags if imminent failures are predicted. If the drive determines that a failure is imminent, the SMART hard drive technology enables the intelligent manageability or management software to generate a fault alert. While the current versions of SMART hard drives do a good job monitoring the data on the hard drive media, the ever increasing emphasis on reliability and quality has promoted HP to implement SMART IV technology which constantly checks that the data flow from host interface to media and media to host interface is not compromised. This is accomplished by inserting a 2 byte parity code into every 512 byte block in the data path of the hard drive's Cache RAM. This unique parity checking performed by HP's SMART IV technology hard drives, allows for more complete error detection coverage encompassing the entire data path between the host and the hard drive.

Smart IV is also known as IOEDC: I/O Error Detection Code.

Native Command Queuing

NCQ or Native Command Queuing is a SATA protocol extension that allows the hard drive to have several write or read commands outstanding at the same time. In contrast, normal non-queued operation requires each command to be completed before the next command is issued by the host system. Queuing allows the drive to complete the commands in the order that allows for best overall throughput. It also involves an advanced method of transferring data to or from the host, called First Party Direct Memory Access (FPDMA), which allows the hard drive and the host controller to manage the data transfers for multiple outstanding commands, without involving the host processor. NCQ can contribute to better performance but the results are dependent on many factors, including the access patterns of the various applications and operating system functions that are initiating drive accesses. Enabling NCQ features in the hard drive requires AHCI support from the host system BIOS, controller, and driver. AHCI support is typically implemented in RAID configurations.

Note: GB = 1 billion bytes. Actual available capacity is less.

Technical Specifications – Hard Disk and Solid State Storage

HP 250-GB 7.2K SATA 6.0Gb/s 3.5" Hard Disk Drive

Capacity	250,059,350,016 bytes
Rotational Speed	7,200 rpm
Interface	Serial ATA 3.0 (6.0 Gb/s)
Buffer Size	8 MB
Logical Blocks	488,397,168
Seek Time (typical reads, includes controller overhead, including settling)	**Single Track:** 1.0 ms **Average:** 8.5 ms **Full-Stroke:** 18 ms
Height (nominal)	1 in (2.54 cm)
Width (nominal)	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)
Operating Temperature	41° to 131° F (5° to 55° C)

HP 500-GB 7.2K rpm SATA 6.0Gb/s 3.5” Hard Disk Drive

Capacity	500,107,862,016 bytes
Rotational Speed	7,200 rpm
Interface	Serial ATA 3.0 (6.0 Gb/s)
Buffer Size	16 MB
Logical Blocks	976,773,168
Seek Time (typical reads, includes controller overhead, including settling)	**Single Track:** 2.0 ms **Average:** 11 ms **Full-Stroke:** 21 ms
Height (nominal)	1 in/2.54 cm
Width (nominal)	Media diameter: 3.5 in/8.89 cm Physical size: 4 in/10.2 cm
Operating Temperature	41° to 131° F (5° to 55° C)

Technical Specifications – Hard Disk and Solid State Storage

HP 1-TB 7.2K rpm SATA 6.0Gb/s 3.5” Hard Disk Drive

Capacity	1,000,204,886,016 bytes
Rotational Speed	7,200 rpm
Interface	Serial ATA 3.0 (6.0 Gb/s)
Buffer Size	32 MB
Logical Blocks	1,953,525,168
Seek Time (typical reads, includes controller overhead, including settling)	**Single Track:** 2.0 ms **Average:** 11 ms **Full-Stroke:** 21 ms
Height (nominal)	1 in/2.54 cm
Width (nominal)	Media diameter: 3.5 in/8.89 cm Physical size: 4 in/10.2 cm
Operating Temperature	41° to 131° F (5° to 55° C)

HP 320-GB 7.2K SATA 6.0Gb/s 2.5" Hard Disk Drive

Capacity	320,072,933,376 bytes
Rotational Speed	7,200 rpm
Interface	Serial ATA 2.0 (3.0 Gb/s)
Buffer Size	16 MB
Logical Blocks	488,397,168
Seek Time (typical reads, includes controller overhead, including settling)	**Single Track:** 2.0 ms **Average:** 12 ms **Full-Stroke:** 22 ms
Height (nominal)	0.374 in/9.5 mm
Width (nominal)	Media diameter: 2.5 in/63.5 mm Physical size: 2.75 in/70 mm
Operating Temperature	41° to 131° F (5° to 55° C)

Technical Specifications – Hard Disk and Solid State Storage

HP 500-GB 7.2K SATA 6.0Gb/s 2.5" Hard Disk Drive

Capacity	500,107,862,016 bytes
Rotational Speed	7,200 rpm
Interface	Serial ATA 2.0 (3.0 Gb/s)
Buffer Size	16 MB
Logical Blocks	976,773,168
Seek Time (typical reads, includes controller overhead, including settling)	**Single Track:** 2.0 ms **Average:** 12 ms **Full-Stroke:** 25 ms
Height (nominal)	0.374 in/9.5 mm
Width (nominal)	Media diameter: 2.5 in/63.5 mm Physical size: 2.75 in/70 mm
Operating Temperature	41° to 131° F (5° to 55° C)

HP 120-GB Solid State Drive

Unformatted Capacity	120 GB
Architecture	Multi Level Cell (MLC) NAND Flash with wear leveling 10 channel controller
Interface	Serial ATA 2.0 (3.0 Gb/s)
Dimensions (W x H x D)	2.74 x 0.37 x 4 in/6.98 x 0.95 x 10.2 cm
Weight	0.18 lb/80 g
Bandwidth Performance	**Sustained Sequential Read:** Up to 250 MB/s **Sustained Sequential Write:** Up to 70 MB/s **Random Read:** Up to 35K IOPs **Random Write:** Up to 6.6K IOPs
Latency	**Read:** 65-ms **Write:** 85-ms
Power	**DC power requirement:** 5 VDC 5%-100 mV ripple p-p **Total power consumption:** 0.15W (active); 0.075W (idle)
Useful Drive Life	35TB written, up to 20GB/day for 5 years
Environmental (all conditions, non-condensing)	**Operating Temperature:** 32° to 158° F (0° to 70° C) **Relative Humidity:** 5% to 95% **Maximum Wet Bulb Temperature** (operating): 84° F (29° C) **Shock:** 1,500 G/0.5-ms

Technical Specifications – Hard Disk and Solid State Storage

HP 128 GB Solid State Drive

Unformatted Capacity	128 GB*	
Architecture	Multi Level Cell (MLC) NAND	
Interface	SATA 6 GB/sec	
Dimensions (W x H x D)	2.75 x 0.276 x 3.96 in (6.985 x 0.7 x 10.05 cm)	
Weight	0.16 lb (73 g)	
Bandwidth Performance	**Sustained Sequential Read:**	Up to 450 MB/s
	Sustained Sequential Write:	Up to 260 MB/s
	Random Read:	up to 46K IOPs
	Random Write:	up to 56K IOPs
Latency	**Read:**	55ms (TYP)
	Write:	55ms (TYP)
Power	**DC power requirement:**	Min 4.5 V; Max 5.5 V
	Total power consumption:	160 mW (Active) ; <85 mW; (Idle)
Useful Drive Life	1.2 million device hours**	
Environmental (all conditions, non-condensing)	**Operating Temperature:**	32° to 158° F (0° to 70° C)
	Relative Humidity:	5% to 95%
	Maximum Wet Bulb Temperature (operating):	84° F (29° C)
	Shock:	1,500 G/1.0 msec
Regulations	UL, CSA, EN 60950-2000, CISPR Pub 22 Class B, CNS 13438, AS/NZS CISPR 22:2002 Class B, Korea KCC, CE Mark	
Option kit contents	HP 128 GB Solid State Drive, documentation, 3.5-inch bay adapter bracket, 3.5-inch bay adapter bracket screws, SATA cable	

* For solid state disk drives, GB means 1 billion bytes. 128GB is the unformatted capacity of this drive before a portion of the drive is reserved for flash management features. Actual capacity will vary by content

** The product achieves a mean time between failure (MTBF) based on population statistics not relevant to individual units.

HP Slim SuperMulti DVD Writer Drive

Height	12.7mm height	
Orientation	Either horizontal or vertical	
Interface type	SATA/ATAPI	
Disc recording capacity	Up to 8.5 GB DL or 4.7 GB standard	
Dimensions (W x H x D)	5.0 x 0.5 x 5.0 in (128 x 13.6 x 129 mm)	
Weight (max)	0.42 lb (190 g)	
Write speeds	DVD-RAM	Up to 5X
	DVD-R DL	Up to 4X
	DVD+R	Up to 8X
	DVD+RW	Up to 4X
	DVD+R DL	Up to 4X
	DVD-R	Up to 8X
	DVD-RW	Up to 6X
	CD-R	Up to 24X
	CD-RW	Up to 16X
Read speeds	DVD-RAM	Up to 5X
	DVD-RW, DVD+RW	Up to 8X
	DVD-R DL, DVD+R DL	Up to 6X
	DVD+R, DVD-R	Up to 8X
	DVD-ROM DL, DVD-ROM	Up to 8X
	CD-ROM, CD-R	Up to 24X
	CD-RW	Up to 24X
Access time (typical reads, including settling)	Random	DVD: < 140 ms (typical), CD: < 125 ms (typical)
	Full Stroke	DVD: < 250 ms (seek), CD: < 210 ms (seek)
	Stop Time	< 4 seconds
	Cache Buffer	2 MB (minimum)
	Data Transfer Modes	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA Mode 3 (44.4 MB/s - default)
	Source	Four-pin, DC power receptacle

Technical Specifications – Removable Storage

Power	DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p
		12 VDC ± 5%-200 mV ripple p-p
	DC Current	5 VDC (< 1000 mA typical, 1600 mA maximum)
		12 VDC (< 600 mA typical, 1400 mA maximum)
	Total Drive Power (standby mode)	< 2.5 Watt
Audio output	Line-Out	0.7 VRMS
	Signal-to-Noise Ratio	74 dB
	Channel Separation	65 dB
Environmental conditions (operating - non-condensing)	Temperature	41° to 122° F (5° to 50° C)
	Relative Humidity	10% to 90%
	Maximum Wet Bulb Temperature	86° F (30° C)

HP Slim DVD-ROM Drive

Height	12.7mm	
Orientation	Either horizontal or vertical	
Interface type	SATA/ATAPI	
Dimensions (W x H x D)	5.0 x 0.5 x 5.0 in (128 x 13.6 x 129 mm)	
Weight (max)	0.42 lb (190 g)	
Read speeds	DVD+R/-R/+RW/ -RW/+R DL /-R DL	Up to 4X
	DVD-ROM	Up to 8X
	CD-ROM, CD-R	Up to 24X
	CD-RW	Up to 24X
Access time (typical reads, including settling)	Random DVD	DVD: < 140 ms (typical), CD: < 125 ms (typical)
	Random CD	DVD: < 250 ms (seek), CD: < 210 ms (seek)
	Data Transfer Modes	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s)
Power	Source	Four-pin, DC power receptacle
	DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p
	DC Current	5 VDC - <1000 mA typical, < 1600 mA maximum

Technical Specifications – Removable Storage

	Total Drive Power (standby mode)	< 2.5 Watt
	Line-Out	0.7 VRMS
Audio output	Signal-to-Noise Ratio	74 dB
	Channel Separation	65 dB
	Temperature	41° to 122° F (5° to 50° C)
Environmental (all conditions non-condensing)	Relative Humidity	5% to 85%
	Maximum Wet Bulb Temperature (operating)	86° F (30° C)

System Memory Support

The HP Compaq Elite 8300 Business PC supports the 2nd and 3rd generation Intel® Core™ processor families. Based on a new PC micro-architecture, the processor is designed for a two-chip platform consisting of a processor and Platform Controller Hub (PCH). Unlike previous generations, the processor includes an integrated memory controller (IMC). The IMC supports DDR3 protocols with two independent, 64-bit wide channels each accessing one or two DIMMs.

- Two channels of non-ECC DDR3 unbuffered dual in-line memory modules (UDIMM) or DDR3 unbuffered small outline dual in-line memory modules (SO-DIMM) with a maximum of two DIMMs per channel
- Single-channel and dual-channel memory organization modes
- Data burst length of eight for all memory organization modes
- DDR3 memory data transfer rates of up to 1600 MT/s; actual supported DDR3 data transfer rate determined by the configured processor.
- 64-bit wide channels
- DDR3 system memory I/O voltage of 1.5V
- Theoretical Maximum Memory Bandwidth:
  - 10.6 GB/s in single-channel mode of 21.3 GB/s in dual-channel mode assuming DDR3 1333 MT/s
  - 12.8 GB/s in single-channel mode or 25.6 GB/s in dual-channel mode assuming DDR3 1600 MT/s
  - 32 GB maximum memory support depending upon available number of DIMM sockets

CAUTION: You must shut down the computer and disconnect the power cord before adding or removing memory modules. Regardless of the power-on state, voltage is always supplied to the memory modules as long as the computer is plugged in to an active AC outlet. Adding or removing memory modules while voltage is present may cause irreparable damage to the memory modules or system board.

Memory Configurations:

Slot 1 is black and must always be populated. Not all memory configurations possible are represented below.

NOTE: For systems configured with more than 3 GB of memory and a 32-bit operating system, all memory may not be available due to system resource requirements. Addressing memory above 4 GB requires a 64-bit operating system.

Total Memory	Socket	
	Channel A (black)	Channel B (black)
2 GB	2 GB	Unpopulated
4 GB (dual channel)	2 GB	2 GB
8 GB (dual channel)	4 GB	4 GB
16 GB (dual channel)	8 GB	8 GB

Intel 82579LM GbE Network Connection (integrated)

Connector	RJ-45
System Interface	Integrated on PCA
Controller	Intel 82579LM GbE platform LAN connect networking controller
Memory	24 KB FIFO packet buffer memory
Data rates supported	10/100/1000 Mbps
IEEE Compliance	802.1P 802.1Q 802.2 802.3 802.3ab 802.3az 802.3u
Bus architecture	PCI Express and SMBus
Data transfer mode	PCIe-based interface for active state operation (S0 state) and SMBus for host and management traffic (Sx low power state)
Power requirement	Requires 3.3V and 1.05V or just 3.3V with integrated regulators Power consumption 0.697 Watts
Boot ROM support	Yes
Network transfer mode	Full-duplex Half-duplex (not supported for the 1000BASE-T transceiver)
Network transfer rate	10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T (full-duplex) 2000 Mbps
Environmental	Operating Temperature: 0° to 85° C Operating Humidity: 60% RH
Management	WOL, auto MDI crossover, PXE, Muti-port teaming, RSS, Advanced cable diagnostic.
Alerting	ASF 2.0 support; AMT 7.0 support

Intel Centrino Advance-N 6205 Wireless Network Interface Connection

Wireless LAN Standards	IEEE 802.11a/b/g/n IEEE 802.11 e, 802.11i, 802.11d, 802.11d, 802.11h
Interoperability	Wi-Fi certified (802.11 a/b/g/n WMM, WPA, WPA2 and WPS) Tested with wireless access points from several major manufacturers OS compatible with Microsoft Windows, Win7 and XP Cisco Compatible Extensions Program compliant (802.11a/b/g only) with Microsoft Windows XP and Windows 7
Frequency Band	2.4 GHz and 5 GHz
Antenna Structure	2 transmit; 2 receive (2x2)

Technical Specifications – Networking and Communications

Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 66 possible data rates, ranging from 6 Mbps to 300 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n specification	
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM	
Security	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES (support for key sizes of 128bits), TKIP, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP, MSCHAP, PEAP-MSCHAPv2, LEAP, EAP-FAST, EAP-SIM, EAP-AKA PAP, CHAP, TLS, GTC Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows XP only.	
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.	
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK	
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required) Intel® My Wifi Technology (iPAN)	
Roaming	Provide seamless roaming between like access points (same frequency band)	
Output Power (for CCK)	15 dBm	
Output Power (for OFDM; power varies by data rate)	15 dBm	
Power Consumption	Transmit: 2.3 Watts (average, with one spatial streams) Receive: 1.9 Watts (average with two receive chains) Idle mode: 30mW – 40mW (average) Radio off: 20 mW (max)	
Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Antenna Connections	3 U.FL type connectors, 50 ohm nominal impedance	
Range	802.11 a - Typical (@6 Mbps)	600 feet - Outdoor Open Area 150 feet - Indoor, Office environment
	802.11 b - Typical (@1 Mbps)	1200 feet - Outdoor Open Area 300 feet - Indoor, Office environment
	802.11 g - Typical (@1 Mbps)	1200 feet - Outdoor Open Area 300 feet - Indoor, Office environment
Form Factor	MiniPCI-Express	
Weight	0.013 lb (4.0 g)	
Dimensions	1.1 x 1.2 in (26.8 x 30.0 mm)	
Operating Voltage	3.3V +/- 9%, 1.5V +/- 5%	
Temperature	**Operating:**	32° to 176° F (0° to 80° C)
	Non-operating:	-40° to 176° F (-40° to 80° C)
Humidity	**Operating:**	10% to 90% (non-condensing)
	Non-operating:	5% to 90% (non-condensing)
	Microsoft Windows XP	Microsoft Windows Win 7

Technical Specifications – Networking and Communications

Configuration Utility	• Microsoft Windows XP Wireless Network Connection Manager • Intel PROSet for Microsoft Windows XP (required for Cisco Compatible Extensions support)	• Intel IHV extensions for Win7 available to support Cisco Compatible Extensions

HP 802.11b/g/n Wireless PCIe Minicard

Dimensions (L x H)	1.18 x 1.06 in (30 x 26.8 mm)	
Controller	Ralink RT5392	
System interface	PCI Express x1	
Network standard	802.11 b/g/n	
Frequency band	2.400 - 2.4835 GHz	
Operating temperature	14° to 140°F, operating (-10° to 60°C, operating)	
Storage temperature	-40° to 176°F, non-operating (-40° to 80°C, non-operating)	
Operating voltage	3.3V +/- .3V 1.2V +/- .06V	
Power Consumption	**Platform/WLAN Mode**	**Power Consumption**
	Not configured (PC on and NIC is powered. Adaptor not configured.)	160 mW
	Disabled (PC on and NIC is powered. Adaptor is configured but disabled)	86 mW
	Tx (Average power consumption measured while adaptor is transmitting a packet.)	HT20 - 1670 mW HT40 - 1560 mW
	Rx (Average power consumption measured while adaptor is receiving a packet.)	HT20 - 820 mW HT40 - 990 mW
	Idle associated (power save)	125 mW
	Idle non-associated	40 mW
	RF kill (RF diable)	29 mW
	Platform in S3 or S4	39 mW
Output Power (approximate)	802.11 g/n modes high data rate (54Mbps, MCS7,MCS15)	+14 dBm +/- 1.5 dB maximum
	802.11 g/n modes low data rate (MCS0)	+17 dBm +/- 1.5 dB maximum
	802.11 b modes	+17 dBm +/- 1.5 dB maximum
Security	IEEE 802.11i 64-/128-bit WEP encryption WPA, WPA-PSK and TKIP, and WPA2 (with AES-CCM support) 802.1x authentication IEEE 802.11i WPA Security 64-/128-Bit WEP Key Privacy IEEE 802.11i Cisco CCX V1.0, V2.0, V3.0, V.4.0 and CCX5.0 certified	
Antenna	Nominal antenna port impedance specification is 50 ohm	

HP 802.11a/b/g/n Wireless Minicard with Bluetooth Combo

Dimensions (L x H)	1.18 x 1.06 in (30 x 26.8 mm)
Controller	Broadcom BCM43228 + BCM20702
System interface	PCI Express x1
Network standard	802.11 b/g/n
Frequency band	Bluetooth: 2.402 - 2.480 GHz Wi-Fi: 802.11a - 5.15-5.85 GHz; 802.11bg 2.412-2.4835 GHz
Operating temperature	32° to 131°F, operating (0° to 55°C, operating)
Storage temperature	-40° to 176°F, non-operating (-40° to 80°C, non-operating)
Humidity	5-90% operating 5-95% non-operating
Operating voltage	3.3 V ±9% I/O supply voltage

	Platform/WLAN Mode	Power Consumption
Power Consumption	**Wi-Fi**	
	Tx Mode	515 mA
	Rx Mode	425 mA
	Bluetooth	
	Tx Mode	40 mA
	Rx Mode	38 mA
	Standby Mode	Wi-Fi + Bluetooth - 165 mA Wi-Fi only - 165 mA Bluetooth only - 0.5 mA
	Radio Off	77 mA
Output Power (approximate)	802.11 a	15.5 dBm@6Mbps; 15.5 dBm@54Mbps
	802.11 b	18.5 dBm@11Mbps
	802.11 g	16.5 dBm@6Mbps; 16.5 dBm@54Mbps
	802.11 n/2.4G	20MHz: 18 dBm@MCS0; 18 dBm@MCS15 40MHz: 17 dBm@MCs0; 17 dBm@MCS15
	802.11 n/5G	20MHz: 16 dBm@MCS0; 16 dBm@MCS15 40MHz: 16 dBm@MCs0; 16 dBm@MCS15

Security	IEEE 802.11i 64-/128-bit WEP encryption WPS, WPA, WPA2, WEP 64bit & 128bit, IEEE 802.11x, IEEE 802.11i
Antenna	Dual antenna connectors

IDT 92HD91Audio

Type	Integrated
HD Stereo Codec	IDT92HD91 4-channel codec
Ports	Line-In/Microphone input ports are 50K (nominal) at the pin Line-Out intended to drive an external 10K load (nominal) and an on board shunt resistor of 20-47K (nominal) Headphone-Out designed to drive 32 ohm (nominal) headphones or a 10K (nominal) load All ports are 3.5 mm
Internal Speaker Amplifier	2W/channel Class-D stereo BTL speaker amplifier@ 4 ohms and 4.75V
Sampling	The 92HD91 audio CODEC provides stereo 24- bit, full duplex resolution supporting sample rates up to 192kHz by the DAC and ADC. SPDIF outputs support sample rates of 192kHz, 96kHz, 88.2kHz, 48kHz, and 44.1kHz. Additional sample rates are supported by the driver software.
Wavetable Syntheses	Yes – Uses OS soft wavetable
Analog Audio	Yes
# of Channels on Line-Out	4 Channels (2 stereo DACs and 2 stereo ADCs) with 24-bit resolution
Internal Speaker	Yes
External Speaker Jack	Yes

SRS Premium Sound Technology

Introduction

SRS Premium Sound™ is a state-of-the-art solution suite which optimizes the audio experience for all business applications including VoIP, computer based training, business presentations and digital content creation for any speaker configuration (notebook/desktop speakers or headphones). SRS Premium Sound delivers natural and immersive surround sound complete with deep, enveloping bass and crystal clear dialog which allows users to clearly hear audio and voice in communications or presentations and ensures that digital content can be experienced with uncompromised quality.

SRS Premium Sound Features

- Premium audio experience for all applications including VoIP, Video Conferencing, Webcasts, Multimedia Presentations and Digital Content Creation
- Natural and Immersive sound from two speakers or headphones
- Custom-tuned solutions to provide superior natural sound from desktop speakers and headphones
- Crystal clear dialog
- Deep, rich bass
- Intuitive user interface with presets for ease of use

SRS Premium Sound Benefits

- Turn your desktop into a multimedia powerhouse!
- Bring your business communication to life with natural sounding voice and clear dialog
- Increase productivity by making computer based training, webcasts and VoIP available anytime and anywhere with crystal clear audio
- Make presentations shine with rich, expansive sound without the need for external speakers
- Take digital content creation to a new level with deep bass, enhanced fidelity and immersive surround sound which ensures that your content is heard with uncompromised quality and detail

Technical Specifications – Keyboards and Pointing Devices

HP USB Keyboard

	Keys	104, 105, 106, 107, 109 layout (depending upon country)
Physical characteristics	Dimensions (L x W x H)	18.12 x 6.47 x 0.96 in (46.03 x 16.43 x 2.44 cm)
	Weight	2 lb (0.9 kg)
	Operating voltage	+ 5VDC ± 5%
	Power consumption	50-mA maximum (with three LEDs ON)
Electrical	System interface	USB Type A plug connector
	ESD	CE level 4, 15-kV air discharge
	EMI - RFI	Conforms to FCC rules for a Class B computing device
	Microsoft® PC 99 - 2001	Functionally compliant
	Keycaps	Low-profile design
	Switch actuation	55-g nominal peak force with tactile feedback
	Switch life	20 million keystrokes (using Hasco modified tester)
Mechanical	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft (1.8 m)
	Microsoft PC 99 - 2001	Mechanically compliant
	Acoustics	43-dBA maximum sound pressure level
	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	-22° to 140° F (-30° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non-condensing at ambient)
Environmental	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence
Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC	
Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

Technical Specifications – Keyboards and Pointing Devices

Kit contents	Keyboard	Installation Guide
	Warranty Card	Safety and Comfort Guide

HP PS/2 Keyboard

Physical Characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country)
	Dimensions (L x W x H)	18.12 x 6.47 x 0.96 in (46.03 x 16.43 x 2.44 cm)
	Weight	2 lb (0.9 kg) minimum
Electrical	Operating voltage	+ 5VDC ± 5%
	Power consumption	50-mA maximum (with three LEDs ON)
	System interface	PS/2 6-pin mini din connector
	ESD	CE level 4, 15-kV air discharge
	EMI - RFI	Conforms to FCC rules for a Class B computing device
Mechanical	Microsoft PC 99 - 2001	Functionally compliant
	Keycaps	Low-profile design
	Switch actuation	55-g nominal peak force with tactile feedback
	Switch life	20 million keystrokes (using Hasco modified tester)
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft (1.8 m)
	Microsoft PC 99 - 2001	Mechanically compliant
Environmental	Acoustics	43-dBA maximum sound pressure level
	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	-22° to 140° F (-30° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence

	Drop (in box)	30 in (107 cm) on concrete, 16-drop sequence
Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, KC	
Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

HP USB Smart Card (CCID) Keyboard

Introduction:

Boost your security, simplify access procedures and reduce the costs associated with managing networks by preventing unauthorized access to your computers and networks using smartcard technology with the HP Smart Card (CCID) Keyboard.

The USB Smart Card (CCID) Keyboard is a full-sized keyboard that takes advantage of digital signatures and certificates to secure the environment for transactions performed on both public and private networks. The USB Smart Card (CCID) Keyboard works with all smart cards that comply with ISO standard 7816.

Smart cards are easy-to-use credit card-sized devices which require multiple forms of information to be validated before you gain access to your accounts or resources. Used worldwide, smart cards strengthen access to a network or other resource using dual-factor authentication. Implementing a two-factor authentication (or multi-factor authentication) process reduces the risk of unauthorized access by verifying and validating your identity in one of the following ways:

- Something you know – a combination of username and password or PIN
- Something you have – a smart card or security token.

Something you have (smart card) plus something you know (PIN), improves user-access security within corporate network environments. Smart cards are used in government agencies, healthcare companies and the finance industry.

HP ProtectTools Smart Card Manager provides authentication software for the smart card. The Smart Card Reader module works with the HP ProtectTools Security Manager and enables the user to setup, use, and manage the smart card. This allows strengthened security with HP patented technology.

Key Benefits:	• Protects against unauthorized access with smart card technology • Delivers even greater security when combined with a HP ProtectTools smart card and the HP ProtectTools Security Software • Combination of username and password or pin with a smart card or security token • Secures online transactions using digital signatures and certificates • Conforms to industry standards for ease of setup and use • Delivers long product life and quiet operation with high-impact materials and lubricated keys • Spill drain feature	
Physical Characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country
	Form factor	USB basic smart card keyboard
	Colors	Carbonite/Silver
	Dimensions (H x W x D)	18.2 x 6.3 x 1.3 in (46.3 x 16.1 x 3.3 cm)
	Weight	2 lb (0.9 kg) minimum
	Operating voltage	+ 5VDC ± 5%
	Power consumption	100-mA maximum (with four LEDs ON)

Technical Specifications – Keyboards and Pointing Devices

Electrical	System interface	USB Type A plug connector	
	ESD	CE level 4, 15-kV air discharge	
	EMI - RFI	Conforms to FCC rules for a Class B computing device	
	Microsoft PC 99 - 2001	Functionally compliant	
Mechanical	Languages	30+ available	
	Keycaps	Standard design	
	Switch actuation	55 g nominal peak force with tactile feedback	
	Switch life	20 million keystrokes (using Hasco modified tester)	
	Switch type	Contamination-resistant membrane	
	Key-leveling mechanisms	For all double-wide and greater-length keys	
	Cable length	6 ft (1.8 m)	
	Microsoft PC 99 - 2001	Mechanically compliant	
Environmental	Acoustics	43-dBA maximum sound pressure level	
	Operating temperature	50° to 122° F (10° to 50° C)	
	Non-operating temperature	-22° to 140° F (-30° to 60° C)	
	Operating humidity	10% to 90% (non-condensing at ambient)	
	Non-operating humidity	20% to 80% (non-condensing at ambient)	
	Operating shock	40 g, six surfaces	
	Non-operating shock	80 g, six surfaces	
	Operating vibration	2-g peak acceleration	
	Non-operating vibration	4-g peak acceleration	
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence	
	Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence	
SmartCard Function	Support	All ISO 7816 smart cards	
	Interface	Reads from and writes to all ISO7816-1, 2, 3, 4 memory and microprocessor smart cards (T=0, T=1)	
	Chipset	SCM STCIII	
	Standard APIs supported	PC/SC, EMV2000, CT-API	
	Power	USB Port	
		Short circuit detection (protects smart card and reader)	
		Power supply compliant with ISO7816 and EMV (5V, 60 mA)	
		Supports 3-V and 5-V cards	
	Power consumption	100-mA maximum draw	
	Communication	From card	9600 bps to 330,000 bps
		From computer	12 Mbps (USB transfer speed)
	Landing mechanism	Contact device	Friction contact
		Card insertions rating	Up to 100,000 insertion cycles
	Interface modes	CCID protocol	
	Reader performance interface	USB connection	

Technical Specifications – Keyboards and Pointing Devices

	Electro-magnetic standards	Europe	2004/108/EC
		USA	USAFCC part 15
Approvals	CE-Mark, UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC, EMV2000, USB-IF		
Ergonomic Compliance	ISO 9241-4, TUVGS		
Kit Contents	Keyboard, I/O Security and Documentation CD, warranty card		

HP USB PS/2 Washable Keyboard

Physical Characteristics	Keys	104 (US) Layout, 105 (EU) layout - depending upon country
	Dimensions (L x W x H)	17.67x 6.62 x 1.38 in (449 x 168 x 35 mm)
	Weight	1.7 lb (0.77 kg) minimum
Electrical	Operating voltage	+ 5VDC ±5%
	Power consumption	50-mA maximum (with three LEDs ON)
	System interface	USB Type A plug connector
	ESD	CE level 4, 15-kV air discharge
	EMI - RFI	Conforms to FCC rules for a Class B computing device
	Microsoft® PC 99 - 2001	Functionally compliant
Mechanical	Keycaps	Stepped -profile design
	Switch actuation	55-g nominal peak force with tactile feedback
	Switch life	20 million keystrokes
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	7 ft (2.2 m)
	Microsoft PC 99 - 2001	Mechanically compliant
Environmental	Acoustics	43-dBA maximum sound pressure level
	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	-22° to 140° F (-30° to 60° C)
	Operating humidity	10% to 95% (non-condensing at ambient)
	Non-operating humidity	0% to 95% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration

	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence
Operating system support	Windows® 7, Windows Vista, Windows XP Professional	
Approvals	UL, cUL, FCC, CE, TUV GS, VCCI, BSMI, C-Tick, KCC, USB-IF, WHQL, EN/IEC 60601-1, IP66/NEMA4X	
Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

HP Wireless Keyboard and Mouse

Keyboard	Dimensions (H x L x W)	1.09 x 18.1 x 6.47 in (27.87 x 460.3 x 164.3 mm
	Weight – Without Two AA Alkaline Batteries	1.94 lb (880 g)
Mouse	Dimensions (H x L x W)	1.46 x 4.53 x 2.47 in (37 x 115 x 62.9 mm)
	Weight – Without Two AA Alkaline Batteries	0.15 lb (67 g)
Receiver	Dimensions (H x L x W)	0.33x 1.79 x 0.72 in (8.4 x 45.5 x 18.4 mm)
	Weight	0.21 oz (5.9 g)
	Cable Length – Minimum	6 ft (1.8 m)
	Range	32.8 ft (10 m)
System Requirements	Windows 7 Home Basic*, Windows 7 Home Premium*, Windows 7 Professional Edition 32*, Windows 7 Professional Edition 64*, Windows 7 Ultimate Edition 32*, Windows 7 Ultimate Edition 64* Windows Vista or Windows XP Available USB port for the receiver CD-ROM Drive *This system may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See http://www.microsoft.com/windows/windows-7/ for details.	
	Product Safety	UL; CSA /TUV (Europe only); CE Mark; CB Report
	Ergonomics	ANSI; ISO (Europe only); GS Mark (Germany only)
	EMC	FCC; CE; ACA (-tick); BSMI; KC ; VCCI
	CE Mark	EN 55022:2010; EN 55024; EN 301489-1; EN 61000
	Design Guidelines for PCs	PC 99 - connector overmold colors; PC 2001 - full functionality
	Telecom	All local telecom requirements and approvals for intended markets
	USA	FCC Title 47 CFR, Par 15, Subpart C; other local requirements
	Country Support	US, Belgium, Switzerland, Spain, Denmark, Netherlands, France, Germany, Italy, Portugal, Sweden, Norway, Finland, UK, Poland, Czech Republic, Turkey, Greece, Austria, Bulgaria, Cyprus,

		Estonia, Hungary, Ireland, Latvia, Lithuania, Luxemburg, Malta, Romania, Slovakia, Slovenia, Vietnam, HK, Australia, NZ, Malaysia, Singapore, Indonesia, Philippines, Thailand, Canada, China, Japan, Korea, Taiwan, India, Venezuela, Ecuador, Russia, Ukraine, Israel, Croatia, United Arab Emirates, Peru, Brazil, Chile, Argentina, Mexico, South Africa, and up to 193 countries worldwide.

HP PS/2 Mouse

Dimensions (H x L x W)	1.46 x 2.48 x 4.53 in (3.70 x 6.29 x 11.50 cm)	
Weight	3.53 oz (100g; +10g/- 5 g)	
Environmental	Operating temperature	-32° to 104°F (0° to 40° C)
	Non-operating temperature	-4° to 140°F (-20° to 60° C)
	Operating humidity	10% to 90% (non condensing at ambient)
	Non-operating humidity	10% to 90% (non condensing at ambient)
Electrical	Operating shock	40 g, 6 surfaces
	Non-operating shock	80 g, 6 surfaces
	Operating vibration	2 g peak acceleration
	Non-operating vibration	4 g peak acceleration
	Drop (out of box)	80 cm height onto asphalt tile over concrete or equivalent, 5-drop in 5 direction except the cable face
	Operating voltage	5 VDC ± 10%
	Power consumption	100mA
	System consumption	PS/2 mini-din connector
Mechanical	ESD	CE level 4, 15 kV air discharge
	EMI-RFI	Conforms to FCC rules for a Class B computing device
	Microsoft PC99 - 2001	Functionally compliant
	Resolution	800 DPI
	Tracking speed	10 in/s (25.4 cm/s) maximum
	Acceleration	±15%
	Switch actuation	65±20 gf
	Switch life	3,000,000 operations (using Hasco modified tester)

Technical Specifications – Keyboards and Pointing Devices

	Switch type	Low force micro-switches
	Tracking mechanism life	80 km
	Cable length	6 ft (1.8 m)
	Microsoft PC99 - 2001	Mechanically compliant
	Width	6 mm
	Diameter	22.5 ± 0.2 mm
Scroll wheel	Maximum rotation force	50 gf-cm
	Switch type	Light force micro-switch
	Switch life	1 million operations
	Mechanical life	Minimum 200,000 revolutions
Regulatory Approvals	UL/cUL, FCC, CE Mark, TUV/GS, VCCI, KCC, BSMI, C-Tick	

HP USB Mouse

Dimensions (H x L x W)	1.5 x 4.5 x 2.5 in (3.8 x 11.6 x 6.3 cm)
Weight	0.22 lb (0.10 kg)
Cable length	70.9 in (180 cm)
System requirements	Available USB port

HP USB 1000dpi Laser Mouse

Dimensions (H x L x W)	1.47 x 4.53 x 2.47 in (37.3 x 114.97 x 62.86 mm)	
Weight	3.360 oz (102g)	
Cable length	70.9 in (180 cm)	
System requirements	Available USB port	
Environmental	Operating Temperature	32° to 104° F (0° to 40° C)
	Non-operating Temperature	-4° to 140° F (-20° to 60° C)
	Operating Humidity	10% to 90% (non-condensing at ambient)

Technical Specifications – Keyboards and Pointing Devices

Mechanical	Resolution	1000dpi
	Tracking Speed	45 cm/sec
	Cable Length	70.9 in (180 cm)

HP USB PS/2 Washable Mouse

Dimensions (H x L x W)	1.56 x 2.44 x 4.61 in (3.95 x 6.21 x 11.7 cm)	
Weight	4.44 oz (126 g)	
Environmental	Operating temperature	–32° to 104°F (0° to 40° C)
	Non-operating temperature	–4° to 140°F (–20° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	10% to 90% (non condensing at ambient)
	Operating shock	40 g, 6 surfaces
	Non-operating shock	80 g, 6 surfaces
	Operating vibration	2 g peak acceleration
	Non-operating vibration	4 g peak acceleration
	Drop (out of box)	80 cm height onto asphalt tile over concrete or equivalent, 5-drop in 5 direction except the cable face
Electrical	Operating voltage	5 VDC ± 10%
	Power consumption	100mA
	System consumption	PS/2 mini-din connector
	ESD	CE level 4, 15 kV air discharge
	EMI-RFI	Conforms to FCC rules for a Class B computing device
	Microsoft® PC99 – 2001	Functionally compliant
Mechanical	Resolution	400 ± 20% DPI
	Tracking speed	10 in/s (25.4 cm/s) maximum
	Acceleration	100 in/s/s (2.54 m/s/s)
	Switch actuation	61 g nominal peak force
	Switch life	3,000,000 operations (using Hasco modified tester)
	Switch type	Low force micro-switches
	Tracking mechanism life	155 mi (250 km) at average speed of 10 in/s
	Cable length	6 ft (1.8 m)
	Microsoft PC99 – 2001	Mechanically compliant
Scroll wheel	Width	8 mm
	Diameter	1.01 in (25.6 mm)
	Maximum rotation speed	48 rats/sec
	Switch type	Light force micro-switch
	Switch life	1 million operations
	Mechanical life	Minimum 200,000 revolutions

Technical Specifications – Keyboards and Pointing Devices

Regulatory approvals	Compliant	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC
Compatibility	Operating system support	Windows 7, Windows Vista Business 64*, Windows Vista Business 32*, Windows Vista Home Basic 32*, Windows 2000, Windows XP Professional or Windows XP Home 32* (No driver is required for this device. Native support is provided by the operating system.), xpe, ce.net, Linux, XP-64 * Certain Windows Vista product features require advanced or additional hardware. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit: http://www.windowsvista.com/upgradeadvisor. For Windows Vista system requirements, visit: http://www.windowsvista.com/systemrequirements.

Environmental Data

Eco-Label Certifications & Declarations

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- US ENERGY STAR®]
- IT ECO declaration
- EPEAT® Gold where HP registers commercial desktop products. See http://www.epeat.net for registration status in your country.

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Ultra-slim Desktop model is based on a typically configured product

Energy Consumption	**115 VAC**	**230 VAC**	**100 VAC**
Normal Operation	37.76 W	32.71 W	37.11 W
Sleep (Energy Star low power mode)	2.43 W	2.36 W	2.48 W
Off	1.33 W	1.34 W	1.33 W

NOTE: Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family . HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured model.

Heat Dissipation*	**115 VAC**	**230 VAC**	**100 VAC**
Normal Operation	126 BTU/hr	127 BTU/hr	127 BTU/hr
Sleep	8 BTU/hr	8 BTU/hr	8 BTU/hr
Off	4 BTU/hr	4 BTU/hr	4 BTU/hr

***NOTE:** Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	**Sound Power (LWAd, bels)**	**Sound Pressure (LpAm, decibels)**
(Typically Configured)		
Idle	3.3	23
Fixed Disk (random writes)	3.3	23

Longevity and Upgrading

This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:

- Intel LGA1155 processor socket
- 6 USB ports
- 1 Serial port (optional)
- 1 Display port
- 1 3.5" or up to 2 2.5"internal drive slot
- 1 5.25" Slimline optical drive slot
- 1 mSATA 3.0 Type A - 35W
- 2 SODIMM memory slots

Batteries

This battery(s) in this product comply with EU Directive 2006/66/EC

Environmental Data

Batteries used in the product do not contain:
Mercury greater the 5ppm by weight
Cadmium greater than 10ppm by weight
Battery size: CR2032 (coin cell)
Battery type: Lithium

Additional information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level where HP registers commercial desktop products. See http://www.epeat.net for registration status in your country.
- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
- This product contains 36.9% post consumer recycled plastic (by wt.)
- This product is 95.2% recyclable when properly disposed of at end of life.

Packaging Materials

External:
o PAPER/Corrugated 1516g
o PAPER/Paper 94g
Internal:
o PLASTIC/Polyethylene high density 39 g
o PLASTIC/EPE-Expanded Polyethylene 533 g

- The PAPER/Corrugated packaging material is made from 25% recycled content.
- The PAPER/Paper packaging material is made from 25% recycled content.
- The PLASTIC/Polyethylene high density packaging material is made from 0% recycled content
- The PLASTIC/EPE-Expanded Polyethylene packaging material is made from 0% recycled content

RoHS Compliance

Hewlett-Packard is committed to compliance with all applicable environmental laws and regulations, including the European Union Restriction of Hazardous Substances (RoHS) Directive. HP's goal is to exceed compliance obligations by meeting the requirements of the RoHS Directive on a worldwide basis. By July 1, 2006, RoHS substances will be virtually eliminated (virtually = to levels below legal limits) for all HP electronic products subject to the RoHS Directive, except where it is widely recognized that there is no technically feasible alternative (as indicated by an exemption under the EU RoHS Directive).

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants - may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes

Environmental Data

- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel - finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Packaging

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment:
Global Citizenship Report
http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html
Eco-label certifications
http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html
ISO 14001 certificates:
http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html

Options and Accessories (sold separately)

AFTER MARKET OPTIONS:

MEMORY	Part Number
HP 2GB DDR3-1600 (PC3-12800) SODIMM	B4U38AA
HP 4GB DDR3-1600 (PC3-12800) SODIMM	B4U39AA
HP 8GB DDR3-1600 (PC3-12800) SODIMM	B4U40AA

DATA STORAGE DRIVES AND ACCESSORIES	Part Number
1 TB, 7200 rpm, SATA -6.0 Gb/s	QK555AA
500 GB, 7200 rpm, SATA -6.0 Gb/s	QK554AA
128 GB SATA Solid State Drive	QV063AA
HP Slim DVD-ROM Drive	VP033AA
HP Slim SuperMulti DVD Writer Drive	QS209AA

INPUT DEVICES	Part Number
HP PS/2 Mouse	QY775AA
HP USB 1000dpi Laser Mouse	QY778AA
HP USB Mouse	QY777AA
HP USB PS/2 Washable Scroll Mouse	BM866AA
HP Mouse Pad	AT485AA
HP PS/2 Keyboard	QY774AA
HP USB Smart Card (CCID) Keyboard	BV813AA
HP Wireless Keyboard & Mouse	QY449AA
HP USB PS/2 Washable Keyboard	VF097AA
HP USB Keyboard	QY776AA
HP USB Grey Keyboard	B6B64AA

SECURITY	Part Number
HP Keyed Cable Lock	BV411AA

MISCELLANEOUS	Part Number
Belkin 7-Outlet Surge Protector	AG290AA
Belkin USB to Serial Adapter	EM449AA
Belkin CAT5e Patch Cable	AH122AA
DisplayPort Cable	VN567AA
DisplayPort To DVI-D Adapter	FH973AA
DisplayPort To HDMI Adapter	BP937AA
DisplayPort To VGA Adapter	AS615AA
HP DVI Cable	DC198A

Options and Accessories (sold separately)

STANDS AND MONITOR ARMS	Part Number
AiO Height Adjustable and Reclining Stand	C1N43AA
HP Single Monitor Arm	BT861AA
HP (Flat Panel Monitor) Quick Release	EM870AA

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